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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,485	03/12/2001	August Sprock	HM-394PCT	5638

7590 04/07/2005

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EXAMINER	
YEE, DEBORAH	
ART UNIT	**PAPER NUMBER**
1742	

DATE MAILED: 04/07/2005

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/744,485
Filing Date: March 12, 2001
Appellant(s): SPROCK, AUGUST

MAILED
APR 07 2005
GROUP 1700

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 29, 2004.

A statement identifying the real party in interest is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

57-104650	**Masatoshi Sudo et al.**	**6-1982**
362112732	**Hiroshi Kamikaji et al**	**5-1987**

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 5 stands rejected under 35 U.S.C. 103 as being unpatentable over the English translation of the Japanese patent 57-104650 (JP'650) in view of the English abstract of Japanese patent 362112732 (JP'732).

Similar to the present invention, the English translation of JP'650 discloses a method of producing dual-phase steels from the hot-rolled state with a 2-phase microstructure of ferrite and martensite by controlling temperature and cooling rate. More specifically JP'650 discloses specific ferritic-martensitic steel examples 4 to 8 in Table 2 and 3rd paragraph on page 14 which are processed in substantially the same manner as claimed by applicant whereby steel is subjected to hot rolling with a finishing

temperature of 825C (T2) followed by cooling at 20C/sec (C1) to 600C(T3) to produce a microstructure of 70 to 85% ferrite with a balance of untransformed austenite, and then directly subjected to a faster cooling rate at 60C/sec (C2) to a coiling temperature (T4) to convert untransformed austenite into martensite without any intermediate air cooling and holding time.

Note that the prior art process first cools at a cooling rate at 20C/sec which is within the claimed first cooling rate of 20-30K/s (note centigrade/sec is equivalent in rate ratio with Kelvin/sec) . Moreover, the first cooling rate obtains 70 to 85% ferrite and is within applicant's claimed ferrite range of 70 to 90%. See 2nd paragraph on page 12 wherein the first cooling rate (C1) is at a cooling speed at which the ferrite forms sufficiently during cooling to T3 and untransformed austenite coexist . The prior art process further cools the steel at a second cooling rate of 60C/sec which is faster than the first cooling rate (C1) and transforms the untransformed austenite to 15 to 30%martensite, see last paragraph on page 12 continuing on page 13 .

Even though prior art does not teach carrying out the first cooling stage in a cooling stretch comprised of several water cooling stages position successively at a spacing from one another as recited by claim 5, such would not be a patentable difference. Note that cooling with successive water cooling stages for steel plate is a well known and conventional technique commonly practice in the metallurgical field as evident by the teaching of the English abstract and figure 1 of JP'732 . Since JP'650 seeks to subject a hot rolled steel plate to control cooling at 20C/second, then it would be obvious and a matter of routine optimization well within the skill of the art to

incorporate well known conventional control cooling technique and apparatus , such as that taught by JP'732 .

(11) Response to Argument

It was argued that the present invention discloses a method which ensures that a dual-phase structure of at least 70-90% ferrite and 30-10% martensite is achieved whereas the prior art teaches a method to manufacture dual-phase steel. It is the examiner's position that the methods of ensuring vs manufacturing a dual-phase steel are the same since the final end product is the same which is a dual phase steel. Moreover, note the preamble of applicant's claim 5 recites "a method for producing dual phase steel.."

Applicant refers to Table 2 of JP'650 and agreed that steels 5 to 8 do meet the microstructural phase limitations of the present invention, but argued that depending on the given composition of the steels, values can deviate as shown in steels 9, 10,15 and 16. It is the examiner's position that it is well known in the metallurgical art that alloying elements play an important role along with the heating temperature and cooling rates to determine the steel microstructure. For example, Cr is an austenite former and Ni is a ferrite former. Although applicant has not required compositional limitations in his present invention, such would still be a factor in determining his microstructure in absence of proof to the contrary. Note that applicant has no convincing evidence with working examples to establish that any steel composition can be applied to his method.

Furthermore, even though applicant is claiming a broader process with no compositional limitations, JP'650 examples 5 to 8 would still closely meet the present

invention because their process step limitations are within those recited by claim 5 except for the type of cooling apparatus used.

It was argued that Table 2 does not make clear whether other structural components are contained in the cooled steel in addition to the mentioned structural components. It is the examiner's position that Table 2 **does** make it clear that there is no other structural components then what is disclosed. Note for example Steel No. 5 shows F+15%M, which would indicate 15%Martensite and a balance (85%) ferrite.

Moreover, regardless of whether the JP'650 primarily discusses steel properties and less on the obtained structures, such does not overlook the fact that JP'650 produces a dual-phase steel in substantially the same manner as applicant.

Also applicant submitted in a previous argument that the JP'650 does not disclose or suggest the method step of claim 5 of the present application in which the cooling curve enters the ferrite region with a temperature which is still so high that the ferrite formation can take place quickly. A more detailed description of this step is disclosed on page 3 of applicant's specification which states"...in that during the first cooling stage the cooling speed of 20K/s to 30K/s that the cooling curve enters the ferrite region with a temperature still so high that the ferrite formation can take place quickly and that already at least 70% of the austenite has been transformed into ferrite before the beginning of the second cooling stage." It is the examiner's position that JP'650 examples 4 to 8 in Table 2 and 3rd paragraph on page 14 enter the ferrite region with a temperature so high that 70-85% ferrite formation takes place at a cooling rate of 20C/sec (equivalent to 20K/sec) before beginning the second cooling stage,

which is same as the present invention. Hence claim would not patentably distinguish over prior art.

In regard to JP'732, it is a secondary general reference to show that the technique of using several water cooling stages positioned successively at a spacing from one another is a well known cooling technique that is conventional and commonly practice in the metallurgical art. Since JP'650 desires to control cool steel plate, then one skilled in the art would be motivated to use a control cooling technique known in the art, such as that taught by JP'732.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Deborah Yee
Primary Examiner
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dy
March 30, 2005

Conferees

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